DEQ Analysis of Wildgame From Tittabawassee River Flood Plain

The Department of Environmental Quality (DEQ) is concerned with the elevated dioxin levels in wildgame living in the floodplain along the Tittabawassee River downstream of Midland that have been reported from a study conducted for The Dow Chemical Company.

Samples of deer muscle and liver, turkey, and squirrel were taken in two areas in the floodplain downstream of Midland and at a comparison location upstream of Midland. The downstream study areas are located near Smith's Crossing (about 4 miles downstream of Dow) and near Imerman Memorial Park (about 13 miles downstream of Dow).

Levels of dioxin in the wild game harvested in the floodplain downstream of Midland are higher than levels found in game harvested from a location upstream of Midland (2 to 120 times higher). Typically, the highest concentrations were seen in the samples collected near Imerman Memorial Park.

The study only tested for dioxin levels in deer, turkey and squirrel harvested from the Tittabawassee River flood plain. Other wild game may also contain dioxin at levels that are a concern and other downstream areas may be affected.

	Deer Muscle			Deer Liver			Turkey Meat			Squirrel Muscle		
	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max
Upstream Concentrations	0.067	0.036	0.169	0.572	0.224	1.26	0.181	0.107	0.388	0.071	0.040	0.107
Smith's Crossing Concentrations	0.169	0.116	0.259	11.1	5.6	19.2	10.2	0.628	25.4	0.403	0.092	1.48
Smith's Crossing/ Upstream	***2.5***	***3.2***	***1.5***	***19.3***	***25.0***	***15.2***	***56.7***	***5.9***	***65.5***	***5.7***	***2.3***	***13.8***
Imerman Concentrations	0.523	0.234	1.24	64.0	8.91	149	12.9	12.9	12.9	1.32	0.083	4.29
Imerman/ Upstream	***7.9***	***6.5***	***7.3***	***111.8***	***39.8***	***118.3***	***71.4***	***120.6***	***33.2***	***18.6***	***2.1***	***40.1***

Note: All concentrations are in parts per trillion (ppt). Highlighted values represent the number of times higher the downstream concentration is compared to the upstream concentration.

The data indicates that these toxins are accumulating in land animals that are fairly low on the food chain. As these animals are eaten by their predators, further biomagnification (increased contamination of animals higher on the food chain) is expected. Additional ecological risk assessment work is needed to determine the significance of this contamination and to determine the level of cleanup necessary to protect the ecology of the Tittabawassee River as well as human health.

It is important to remember that average levels of dioxin in wild game should not be compared to the trigger level of 10 ppt for Michigan Fish Consumption Advisories. Fish advisories are based on how much and how often a person will eat sport-caught fish, however this information is not available for wild game.

On August 5, 2004, the EPA issued an “EPA Desk Statement on Dow Off-Site Contamination” which addresses this issue. This statement also indicates that there may be unacceptable risks to human health from contamination of the food chain. The EPA desk statement concludes that the wild game and other exposure pathways need to be considered when making dioxin cleanup decisions in Midland and the Tittabawassee River and Saginaw River watersheds.

The DEQ will continue to work with Dow, and other State and Federal agencies to provide updated information to the public on this issue, plan and conduct additional investigations, and address the soil and sediment contamination that has resulted in the contamination of these animals.